

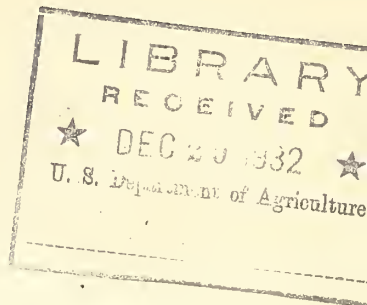
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UNITED STATES DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU  
Washington



January 1, 1933.

VERIFICATION OF FORECASTS

(1) Letters are frequently received from station officials making inquiry regarding verification of forecasts. In checking local forecasts for differences of a character requiring verification, it is found that many differing local forecasts are not reported on Form 1069, as required by instructions. In many instances this appears to be due to a misunderstanding as to what constitutes a differing forecast. Therefore, the following description of methods of verification in use at the Central Office as of date January 1, 1933, and a summary of the instructions on the subject are provided for the information and guidance of practice and local forecasters and other station officials:

Forecasts Verified

(2) Three classes of a.m. forecasts are given official verification ratings at the Central Office as follows:

(a) State forecasts. Prepared and issued by the district forecasters for the several states in their districts.

(b) Local forecasts, when differing from state forecasts according to verification rules. Those that do not differ technically from the state forecast are considered as having the same verification rating as the state forecast.

(c) Practice forecasts, made by a limited number of employees specifically authorized to engage in the work, are given official verification ratings. If a practice forecaster prepares and forwards to the Central Office less than 20 practice forecasts during any one month, his work for that month is not graded.

Forecasts not Verified

(3) Forecasts issued at night and on Sunday and holiday mornings, weekly outlooks, marine forecasts, route, trip and three hourly forecasts, and frost, cold wave, and storm warnings are not given verification ratings.

Employees Authorized to Prepare Forecasts

(4) State forecasts are prepared at the district forecast centers by forecasters regularly assigned to the duty and by relief forecasters authorized to substitute for them.

(5) Local forecasts which are merely adaptations and amplifications of the district forecasts as applied to the locality and do not differ therefrom may be issued by officials in charge of stations and assistants temporarily in charge.

(6) Differing local forecasts, not in accord with the district forecast under verification rules, are permitted only when issued by officials in charge of stations who have maintained a satisfactory local forecast record and, in the absence of the official in charge, by such assistants as have qualified by practice forecast work and have been given such authority in writing.

(7) Advancement of an employee to charge of a station does not automatically authorize him to issue differing forecasts if he previously did not have such authority.

(8) When an employee who has not authority to issue differing forecasts temporarily acts for an official in charge who has such authority, the employee temporarily in charge must not make a differing forecast but must publish a local forecast which is in agreement with the part of the State forecast applicable to the locality.

(9) Each year, after publication of an item in Topics and Personnel calling for applications, a limited number of employees are authorized to prepare practice forecasts. As a rule applicants having less than one and one-half years' service in the Bureau are not considered.

(10) Employees who are not included in the official practice groups are encouraged to make forecasts for their own verification.

#### Content of Forecasts

(11) State forecasts issued from district centers are for states or portions thereof and specify weather and temperature conditions expected to occur in distinct periods, from 8 p.m. of the same day to 8 a.m. of the following day; and from 8 a.m. to 8 p.m. of the following day, (75th meridian time). Occasionally, when unusually strong winds are expected, wind forecasts are also included in the state forecasts. Forecasts for states bordering on the Gulf and Pacific always contain a wind element, which applies to coastal areas. Wind forecasts for coastal areas of states bordering on the Atlantic and Great Lakes are issued separately.

(12) Only two elements in state forecasts are given verification ratings - weather (occurrence or non-occurrence of precipitation) and temperature.

(13) Local forecasts prepared by authorized officials are amplifications or modifications of the state forecast so as to indicate in greater detail conditions expected to occur in the vicinity of the station. They cover local conditions as to expected weather, temperature and winds (at coastal and Great Lakes stations). They may contain predictions of minimum temperatures for the following nights during the cold months and of maximum temperatures for the following day during periods of extreme heat. They also are given official ratings for only the two elements - weather and temperature.

(14) Practice forecasts are made only for the two elements - weather and temperature - and are graded in the same manner as state forecasts.



They are prepared on week days but not on Sundays and holidays and are based on the morning weather map.

#### Definite and Indefinite Forecasts

(15) The terms "definite" and "indefinite" are used in connection with precipitation but not with temperature forecasts.

(16) A definite forecast is one which clearly specifies precipitation or absence of it, for either or both periods.

(17) Indefinite forecasts are of two kinds:

(a) Forecasts of precipitation for both periods connected by the word "or". These are termed "Or" forecasts.

(b) Forecasts of precipitation qualified by the words "probably" or "possibly", when applied to both periods. These are termed "Probably" forecasts.

(18) A forecast of precipitation for one period, in which either word, "probably" or "possibly", is used, is not considered indefinite if absence of precipitation is clearly indicated for the other period. Examples of definite and indefinite forecasts are given in Topics and Personnel, June, 1924.

(19) Methods of verifying indefinite forecasts are described in Station Regulations.

#### State, District and Local Forecasts

(20) State forecasts may contain predictions for the state as a unit or may specify different conditions in certain portions of the state, e.g., "northwest portion", "interior", "west and central", etc. The subdivisions of states for forecast purposes are given in Station Regulations. In making local applications of the state forecast, the station official must be familiar with the various subdivisions of the state and the location of his station with reference thereto. In case of doubt, information may be secured from the Central Office.

(21) The local forecast is strictly applicable to a particular station and its immediate vicinity. The state forecast is also applicable to the same locality. When the district forecaster expects conditions in the portion of the state in which the station is located to be different from the remainder of the state, the state forecast is so worded as to indicate such an expectation.

(22) For convenience, the state forecast or that portion of it which applies to a particular locality is termed the "district" forecast for that locality. Thus, there may be two separate forecasts for any locality -- the local forecast and the district forecast. When the local forecast is not in agreement with the district forecast under verification rules, the local forecast is "differing".

### Differing Local Forecasts Defined

(23) The local forecast is compared with the district forecast for the sub-division of the state in which the station is located to ascertain whether a differing forecast has been made. Local forecasts are considered differing from the district forecast under the following conditions:

(a) When the local forecast contains a definite prediction of precipitation for one or both periods and the district forecast does not specify precipitation for the corresponding period or periods.

(b) When the local is a "probably" forecast or an "Or" forecast and the district is a forecast of fair for one or both periods. (Note: Indefinite local forecasts such as "probably rain tonight, and Tuesday", "rain tonight or Tuesday", etc., will not be considered differing when the district forecast is a definite prediction of precipitation for both periods).

(c) When the reverse of (a) and (b) occurs in relation to local and district forecasts.

(d) When the district forecast indicates colder weather for either or both periods and the local forecast indicates stationary temperature or warmer for the corresponding period or periods.

(e) When the district forecast indicates warmer weather for either or both periods and the local forecast indicates colder or stationary temperature for the corresponding period or periods.

(f) When the district forecast indicates stationary temperature for either or both periods and the local forecast indicates warmer or colder for the corresponding period or periods.

(24) Modifying terms in temperature forecasts are not given weight in verification. Forecasts of "slightly warmer", "somewhat colder", "slowly rising temperature", etc., are verified by temperature changes of the kind predicted without regard to the amount of the change. Forecasts of "little change in temperature", "no decided change", "continued warm", "continued cold", etc., imply stationary temperature and are verified by temperature changes which do not exceed the stationary limit for the season.

### Discretion in Issuing Differing Local Forecasts

(25) The aim of the local forecaster should be that of giving the best possible service to the public. Differing forecasts should be made only when there is a strong presumption that the conditions indicated in district forecasts are materially different from those which will occur in the vicinity of the station. Striving for a technical advantage over the district forecaster by inconsequential differences, which will not be of appreciable interest to the public, is not justifiable. At times conditions are such that it is difficult to determine whether or not precipitation will occur in the period covered by the forecast and what will be the

extent of the temperature change, if any. In such instances it is very desirable that no local forecasts be issued which are sharply contrasted with the district forecast for the particular locality, as such forecasts tend to provoke criticism.

(26) Some local forecasters issue many differing forecasts, with failures almost equalling, and frequently exceeding, their successes. The net gain, if any, is relatively small compared with the total number of differing forecasts issued. Local forecasting of this character is not of advantage to the local forecaster or to the public and is not creditable to the Bureau.

(27) Officials authorized to make local forecasts may change the wording of the district forecast without involving a difference under verification rules, whenever there are justifying reasons for doing so. Thus, the state forecast may indicate fair weather for the station and its vicinity and the local official may change it to increasing cloudiness, cloudy, etc. Temperature changes may be modified in a similar way. In this connection it should be borne in mind that a mere change in language purely for the sake of a change is objectionable and is not permissible. It is desirable that, as far as practicable, the district and local forecasts be alike in substance and language. Frequent variations, even in language which involves no technical differences, are not conducive to public confidence.

#### Methods of Verification

(28) State and practice forecasts are verified by areas. On the maps used at the Central Office for verification purposes, all reports received from first and second order stations by telegraph and by mail (on Forms 1035, and 3069A and B) are entered. Lines are drawn delineating the areas of precipitation and temperature change. In drawing these lines, all reports are carefully considered. Thus, although occurrences of precipitation and temperature change outside a state are not directly used in verifying forecasts for that state, station reports in adjoining states, near the border, are considered in drawing the lines within the state and thus in some measure enter into the verification.

(29) In verifying differing local forecasts as compared with the district forecasts, occurrences of temperature change and precipitation at the local station only are used and occurrences at adjoining stations are not given any weight.

(30) In the verification of temperature, lines are drawn through points having a temperature change (plus or minus), equal to the station-ary limit. For precipitation, a line is drawn enclosing areas having precipitation in excess of .01 inch and another line enclosing areas having precipitation amounting to a "trace" or more.

(31) Precipitation and temperature forecasts (State and Practice) are then verified in accordance with the areas of precipitation and temperature



change shown on the map. When the precipitation area covers one-half of a state, a definite forecast of precipitation for that state is considered as fully verified; and lesser areas in proportion, but an indefinite forecast is verified by actual areas of precipitation.

(32) Forecasts of thunderstorms, which include "thundershowers", "local thunderstorms", "scattered thunderstorms", etc., will be verified in accordance with the rules applying to precipitation forecasts, except in cases like the following: "Thunderstorms this afternoon or tonight. Thursday fair." Such forecasts will be verified if thunderstorms accompanied by precipitation occur either in the afternoon or at night or during both afternoon and night. When precipitation occurs in the night period and there is a thunderstorm without precipitation in the afternoon, or vice versa, the forecast will be fully verified. In no other cases will a thunderstorm without precipitation verify a thunderstorm or precipitation forecast. Forecasts of "thunderstorms this afternoon or tonight" will not be verified under the foregoing rule when precipitation is forecast for the second period.

#### Verification Records

(33) Complete records are maintained at the Central Office of all forecasts that are given verification ratings. Authorized employees who prepare state and practice forecasts are notified monthly of the results of verification during the month. Local forecasters who issue differing local forecasts are notified annually of the results attained.

#### Instructions for Making Practice Forecasts

(34) Practice forecasts are prepared on Form No. 1069, in accordance with the instructions appearing on the form. They must be prepared from the a.m. pencil chart and mailed before noon of the day of issue, except that employees whose hours of duty do not permit preparation of forecasts at that hour may, on receipt of specific authorization to that effect, prepare and mail practice forecasts at a later hour.

(35) When practice forecasts are forwarded on less than 20 days during any one month, a memorandum to that effect should be forwarded on Form 1069 at the end of the month.

#### Instructions for Reporting Differing Local Forecasts

(36) Whenever an authorized official issues a local forecast which differs from the state forecast as applied to the locality, he is required to enter the state and local forecasts on Form No. 1069, with the differing elements of the local forecast underscored, red for weather and blue for temperature. These forms are not mailed until the end of the month, when all forms for differing local forecasts made during the month are fastened together and forwarded to the Central Office, marked "Forms for Verifier". Monthly files of maps, cards, or bulletins, are not required (after December 31, 1932) to be mailed to the verifier.



(37) However, instructions regarding mailing of weekly files of maps, cards, or bulletins to the Forecast Division remain unchanged. By these instructions all stations are required to mail to the Central Office on Saturday a complete file of maps, cards, or bulletins issued during the week. In addition, all officials issuing local forecasts will mail a similar file to the Forecast center of the district in which the station is located. In the Washington district, the two files mailed to the Central Office each week, from stations issuing local forecasts, will be mailed together but separated by clips or rubber bands.

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